



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

OFFICE OF  
PREVENTION, PESTICIDES AND  
TOXIC SUBSTANCES

August 3, 2000

MEMORANDUM

SUBJECT: ADDENDUM TO "OCCUPATIONAL EXPOSURE AND RISK ASSESSMENT  
UPDATING THE COUMAPHOS RED PUBLISHED AUGUST 1996." Dated  
December 28, 1999. (PC 036501 and DP Barcode D267778 )

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This document is intended to supply data to be used in risk mitigation decision making. Please refer to the document "Occupational Exposure and Risk Assessment Updating the Coumaphos RED Published in August 1996" dated December 28, 1999 for more details regarding the calculations and for use information.

For the high and low pressure handwands, the Aggregate Risk Indexes (ARI) were recalculated to determine if the risks from wearing just a long sleeved shirt, long pants, shoes, socks and gloves would be of concern. The data was calculated using the Pesticide Handlers Exposure Database (PHED). The PHED data for mixing/loading liquids for high pressure handwand are high confidence. The PHED data for applying liquids with a high pressure handwand and mixing/loading/applying liquids with a low pressure handwand are low confidence. The results of the calculation are presented in Table 1.

**Table 1. High and Low Pressure Handwand Short-term MOEs and ARIs**

Exposure Scenario	Animal	Dermal MOE	Inhalation MOE	Short-term ARI <sup>a</sup>
Mixing/Loading liquids for high pressure handwand (1a)	cattle/horse	7,200	56,000	52
	swine	30,000	23,000	220
Applying liquids for high pressure handwand (3)	cattle/horse	260	840	1.4
	swine	1,100	3,500	5.7
Mixing/Loading/Applying liquids with a low pressure handwand (5)	cattle/horse	970	5,600	6.3
	swine	4,000	23,000	27

a  $\text{Short-term ARI} = 1/((1/(\text{calculated short-term dermal MOE}/\text{target short-term MOE (100)}) + (1/(\text{calculated short-term inhalation MOE}/\text{target short-term MOE (300)})))$ . Target level is 1. Clothing includes long sleeved shirt, long pants, shoes, socks, and gloves.

For the high and low pressure handwands, all scenarios have an ARI greater than 1. All calculations take the 100 animals treated per day limit on the label into consideration. Mixing/loading and applying liquids with high pressure handwands are activities that are most likely done by the same person. Therefore, the combined risk from the two activities would result in an ARI slightly lower than the lowest separate ARI value.

As a prudent safety protection, HED is convinced that a dust/mist respirator should be required for handlers applying coumaphos dust to livestock with a shaker can for the following reasons:

- Currently EPA has no inhalation toxicity study upon which to base an inhalation endpoint for coumaphos. The study being used as a surrogate is an oral study in which no NOAEL was established. HED notes that an additional uncertainty factor of 3X was added to adjust for the use of a LOAEL rather than a NOAEL. With respect to inhalation exposures to dust, HED believes that the use of an oral study to assess inhalation risk gives an uncertainty to the final risk numbers.
- Currently EPA has no exposure study with which to estimate the inhalation exposure likely from applying dust to livestock with a shaker can. The Outdoor Residential Exposure Task Force (ORETF) shaker-can study was estimated exposures from applying dusts in to a garden. HED believes that inhalation exposures from applying dusts to relatively tall, moving livestock are likely to be significantly higher than those resulting from applying dusts to low-growing garden plants, since it is likely that more dust will reach the applicator's breathing zone during application to livestock. In addition, HED believes that occupational handlers applying dusts to livestock are likely to handle significantly more active ingredient per day than would a home gardener. In lieu of an dust applicator study, HED believes that inhalation risks to such applicators could be adequately mitigated with the addition of a dust/mist respirator.
- In addition to adequately mitigating inhalation risks to applicators, the dust/mist respirator also would assist in mitigating risks from accidental ingestion by applicators who might otherwise swallow dusts that settle on their mouth.

Due to the uncertainty with the inhalation toxicological endpoints, the lack of scenario-specific exposure data, the nature of the endpoint (i.e., cholinesterase inhibition in red blood cells), and the high likelihood of dusts in the applicator's breathing zone, HED believes that imposing a requirement for a dust/mist respirator for handlers applying coumaphos to livestock with a shaker-can is the correct and prudent decision. With the proposed shaker can restriction of 25 cattle per day, the duration that the applicator is expected to wear the respirator will be relatively short (less than an hour). HED notes that the newest styles of dust/mist respirator are lightweight and easy to breath through and are unlikely to impose an severe respiratory or heat-related burden to the applicators.

The use of a shaker can to apply dust to swine bedding and the loading of dusts into a dust bag also lack scenario specific data. The use of wettable powder PHED data would be an underestimate of exposure because, according to coumaphos demonstrations, there is significant hand exposure when the dust package is placed into the dust bag. This is not accounted for when using the PHED data as a surrogate for this exposure scenario. Since only one level of PPE is placed on a label, HED believes that any uncertainties from the lack of data for these scenarios will be addressed by the PPE required for the previously mentioned application to animals with a shaker can.